

## PATENT ABSTRACTS OF JAPAN

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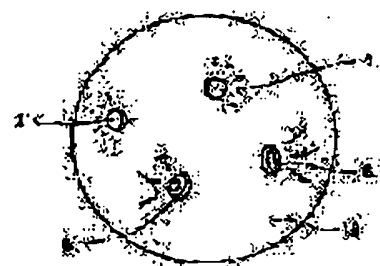
(71) Applicant : NISSIN ELECTRIC CO LTD  
(72) Inventor : DOI AKIRA

## (54) DIGESTIVE ORGAN SYSTEM DIAGNOSING APPARATUS

(57) Abstract:

**PURPOSE:** To diagnose an internal wall of a digestive organ system quickly, inexpensively and at a high accuracy with no pain.

CONSTITUTION: This apparatus is provided with a superminiature LED lamp 1 which flows into a digestive organ system to irradiate inside the system, a super miniature CCD camera 6 which flows into the system and photographs the inside of the system irradiated with a lamp 1 to output an image signal and a monitor TV 14 which receives an image signal to project.



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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the digestive-system diagnostic equipment which diagnoses a human body or the wall state of the digestive system of other animals.

[0002]

[Description of the Prior Art] Conventionally, large intestine inspection by inspection of the esophagus and the stomach by radiopacity after the periodic medical examination of a digestive system etc. drinks barium etc., a diagnosis of the pancreas and the kidney by the ultrasonic wave, and palpation etc. is conducted.

[0003] And when abnormalities are found in a periodic medical examination, gastroscope or a large intestine medical camera is inserted, and still more detailed inspection is conducted.

[0004]

[Problem(s) to be Solved by the Invention] Cost is high, discovery of the initial abnormalities which should be discovered early stage is difficult, the conventional periodic medical examination etc. requires advanced medical checkup technology; gastroscope inspection has [there is displeasure which moreover drinks foreign matters, such as barium, and] the trouble being accompanied by still much more pain, with the pain by the palpation at the time of a large intestine medical checkup. [0005] this invention aims at offering analgesia, quickness, and the digestive-system diagnostic equipment that can be diagnosed cheaply and with high precision with careful attention to the aforementioned point.

[0006]

[Means for Solving the Problem] It has the monitor TV which receives the micro CCD camera which picturizes the inside of the micro Light Emitting Diode lamp which the digestive-system diagnostic equipment of this invention flows in a digestive system and irradiates the inside of the system, and the system which it flowed in the system and was irradiated with the lamp, and outputs a picture signal, and a picture signal in order to solve the aforementioned technical problem, and projects.

[0007]

[Function] A camera picturizes the wall of the digestive system irradiated with the lamp, a monitor TV projects the picture signal, and a digestive system is diagnosed one by one as the lamp and camera move the digestive-system diagnostic equipment of this invention constituted as mentioned above with an esophagus, the stomach, and intestines by drinking a Light Emitting Diode lamp and a micro CCD camera.

[0008]

[Example] One example is explained with reference to a drawing. It is the transparent resin which the power supply section which consists of combination of batteries, such as a micro capacitor for power storage or a film battery with which the Light Emitting Diode light-emitting-device (light emitting diode element) section from which 1 constitutes the micro Light Emitting Diode lamp of the size about a tablet, and 2 constitutes a lamp 1, and 3 were prepared behind the element section 2, or a aforementioned capacitor and a battery, and 4 cover the receiving-circuit section, and 5 covers the element section 2, a power supply section 3, and the receiving-circuit section.

[0009] The CCD element (charge-coupled device) section from which 6 constitutes the micro CCD camera of the size about a tablet, and 7 constitutes a camera 6, the lens with which 8 was prepared in the anterior part of the CCD element section 7. 9 are the reception-and-transmission circuit sections prepared behind the CCD element section 7 through the power supply section 3, and a lens 8, the CCD element section 7, a power supply section 3, and the reception-and-transmission circuit section 9 are covered with the transparent resin 5 like the lamp 1.

[0010] A human body and 11 are the VCO for electric power supplies with which the stomach and 12 were prepared in the intestines and 13 was prepared in the outside of the body, and 10 supplies power to the lamp 1 in the internal organs of a human body 10, and the power supply section 3 of a camera 6.

[0011] 14 is a monitor TV, receives the picture signal from the camera 6 in the living body with an antenna 15, and projects a picture signal on a monitor TV 14 through the amplifying-circuit section 16. 17 is inspectors, such as a doctor who diagnoses with a monitor TV 14.

[0012] On the occasion of a diagnosis, with the transparent body 18 which is gelatinous as for an agar, a liquid, for example main \*\*, with high viscosity, etc., and penetrates the electric wave for reception and transmission, and CCD Induction light within internal organs. Drink two or more micro Light Emitting Diode lamps 1 and micro CCD cameras 6, and power is supplied to the lamp 1 in the living body and the power supply section 3 of a camera 6 through the receiving-circuit section 4 and the reception-and-transmission circuit section 9 from VCO 13 for electric power supplies. The wall of a digestive system is irradiated by the Light Emitting Diode light emitting device 2 of a lamp 1, it picturizes by the CCD element section 7 of a camera 6, and a picture signal is sent from the reception-and-transmission circuit section 9. This state is drawing 1.

[0013] An antenna 15 receives the picture signal, it projects to a monitor TV 14 through the amplifying-circuit section 16, and an inspector 17 diagnoses. In this case, a picture signal is simultaneously recorded on VTR and CD-ROM.

[0014] A lamp 1 and a camera 6 observe the stomach 11 and intestines 12 one by one, finally observation of the rectum at the anus is finished, and these foreign matters are emitted to the outside of the body with a body 18.

[0015]

[Effect of the Invention] Since this invention is constituted as explained above, the effect indicated below is done so. Will being based on barium or gastrocamera like before by flowing the micro Light Emitting Diode lamp 1 and micro CCD camera in a digestive system, picturizing the wall of the digestive system irradiated with the lamp 1 with a camera 6, and project picture signal to a monitor TV 14, the wall of a digestive system can be diagnosed with a quickly sufficient precision by analgesia, and moreover, it is cheap and can diagnose at an early stage.

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CLAIMS

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## [Claim(s)]

[Claim 1] Digestive organ system diagnostic equipment equipped with the micro CCD camera which picturizes the inside of the micro Light Emitting Diode lamp which flows in a digestive organ system and irradiates the inside of the aforementioned system, and the aforementioned system which it flowed in the aforementioned system and was irradiated with the aforementioned lamp, and outputs a picture signal, and the monitor TV which receives and projects the aforementioned signal.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the diagnostic-state view of one example of the digestive-system diagnostic equipment of this invention.

[Drawing 2] It is the perspective diagram of the micro Light Emitting Diode lamp of drawing 1.

[Drawing 3] It is the perspective diagram of the micro camera of drawing 1.

[Drawing 4] It is the general drawing of this invention.

[Description of Notations]

1 Micro Light Emitting Diode Lamp

6 Micro Camera

14 Monitor TV

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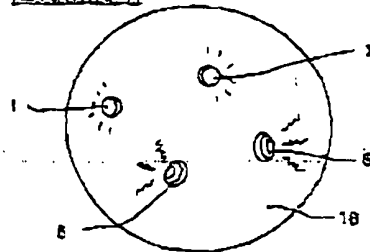
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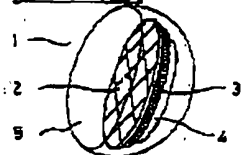
## DRAWINGS

[Drawing 1]

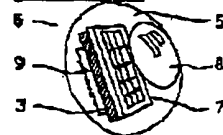


- 1 超小型LEDランプ
- 2 超小型カメラ
- 3 4 モニタテレビ

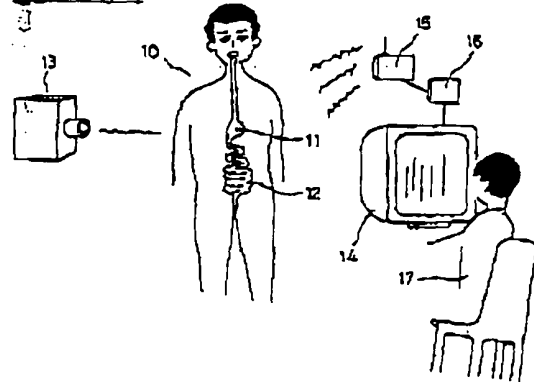
[Drawing 2]



[Drawing 3]



[Drawing 4]



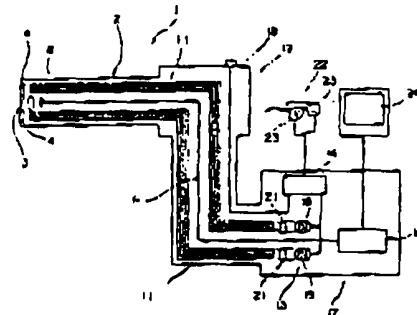
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**(54) ENDOSCOPE DEVICE**

(11) 63-200115 (A) (43) 18.8.1988 (19) JP  
 (21) Appl. No. 62-34024 (22) 17.2.1987  
 (71) OLYMPUS OPTICAL CO LTD (72) HISAO YABE  
 (51) Int. Cl. G02B23/26, A61B1/00, G02B23/24

**PURPOSE:** To observe a minute ruggedness on the wall surface of a body cavity by constituting an endoscope device of a pair of illuminating means which alternately illuminate the inside of the body cavity, means which convert body cavity inside images obtained by respective illuminating light to visible images, and a shielding means which alternately shields right and left visual fields synchronously with illumination.

**CONSTITUTION:** The body cavity inside is alternately illuminated by two illuminating lenses 4 and 4 and body cavity inside images at this time are falsely stereoscopically observed by the after image phenomenon. Meanwhile, light shielding glasses 22 have a light shielding filter 23 for left eye set to the light shielding state and have a light shielding filter 23 for right eye set to transmission state in a field A synchronously with lighting of light source lamps 19 and 19 to see a monitor 24 with only the right eye, and the glasses 22 have the light shielding filter 23 for right eye set to the light shielding state and have that for left eye set to the transmission state in a field B to see the monitor with only the left eye. The object is alternately illuminated from the right and the left of an objective optical system and respective observation images are allowed to correspond to right and left eyes and are alternately observed in this manner. Thus, a false stereoscopic image is observed by the after image phenomenon.



1: endoscope, 2: insertion part, 3: objective lens system,  
 4: solid-state image pickup element, 9: signal line, 11:  
 light guide, 17: controller

359/600

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